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3M

October 26, 2004

8EHQ-1004-15957

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Office of Pollution, Prevention and Toxics
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N. W.
Washington, DC 20460
Attention: Section 8(e) Coordinator

Re: **TSCA Section 8(e) Submissions**

Dear Sir/Madam:

3M Company ("3M") requests that EPA place the attached studies in the TSCA Section 8(e) docket. We have included a master index for these studies identifying the study title, test substance and CAS number. A Confidential Business Information (CBI) version of this index and the studies also is being submitted today pursuant to EPA procedures. 3M has not provided CBI substantiation with this submission, but would be willing to do so at the Agency's request.

3M has concluded that data in these studies may not be, strictly speaking, "corroborative" of previously reported or published information as defined in EPA's reporting guidance or otherwise potentially may warrant 8(e) submission based on EPA's reporting guidance.

3M appreciates EPA's attention to this matter. Please contact the undersigned if you have any questions or require further information regarding this submission.

Very truly yours,

Katherine E. Reed (9.7.)

Dr. Katherine E. Reed, Ph.D
Staff Vice President
Environmental Technology and Safety Services
(651) 778-4331
kereed@mmm.com

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Master Index to Studies Submitted Under TSCA 8(e) by 3M Company on October 26, 2004
(Confidential Business Information Redacted)

Title	Substance Information	CAS Information
Aquatic Toxicity Data Sheet: 48hr *Daphnia Magna*	1,4-dioxane; heptadecafluoro-1-octanesulfonic acid; linear n-ethyl perfluorooctanesulfonamide; n-ethylperfluorooctanesulfonamidoethyl alcohol; poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]-.omega.-hydroxy-; poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(nonafluorobutyl)sulfonyl]amino]ethyl]-.omega.-hydroxy-; poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl]-.omega.-hydroxy-; poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl]-.omega.-hydroxy-; poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl]-.omega.-hydroxy-; polyethylene glycol; water	1,4-dioxane (123-91-1); heptadecafluoro-1-octanesulfonic acid (1763-23-1); linear n-ethyl perfluorooctanesulfonamide (4151-50-2); n-ethylperfluorooctanesulfonamidoethyl alcohol (1691-99-2); poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]-.omega.-hydroxy- (29117-08-6); poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(nonafluorobutyl)sulfonyl]amino]ethyl]-.omega.-hydroxy- (68298-79-3); poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl]-.omega.-hydroxy- (68298-81-7); poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl]-.omega.-hydroxy- (56372-23-7); poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl]-.omega.-hydroxy- (68298-80-6); polyethylene glycol (25322-68-3); water (7732-18-5)
Multigeneration Daphnid Life Cycle Test	1,4-dioxane; heptadecafluoro-1-octanesulfonic acid; linear n-ethyl perfluorooctanesulfonamide; n-ethylperfluorooctanesulfonamidoethyl alcohol; poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]-.omega.-hydroxy-; poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(nonafluorobutyl)sulfonyl]amino]ethyl]-.omega.-hydroxy-; poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl]-.omega.-hydroxy-; poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl]-.omega.-hydroxy-; poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl]-.omega.-hydroxy-; polyethylene glycol; water	1,4-dioxane (123-91-1); heptadecafluoro-1-octanesulfonic acid (1763-23-1); linear n-ethyl perfluorooctanesulfonamide (4151-50-2); n-ethylperfluorooctanesulfonamidoethyl alcohol (1691-99-2); poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(heptadecafluorooctyl)sulfonyl]amino]ethyl]-.omega.-hydroxy- (29117-08-6); poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(nonafluorobutyl)sulfonyl]amino]ethyl]-.omega.-hydroxy- (68298-79-3); poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(pentadecafluoroheptyl)sulfonyl]amino]ethyl]-.omega.-hydroxy- (68298-81-7); poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(tridecafluorohexyl)sulfonyl]amino]ethyl]-.omega.-hydroxy- (56372-23-7); poly(oxy-1,2-ethanediyl), .alpha.-[2-[ethyl[(undecafluoropentyl)sulfonyl]amino]ethyl]-.omega.-hydroxy- (68298-80-6); polyethylene glycol (25322-68-3); water (7732-18-5)
Aquatic Invertebrate Testing - Alkyltins LR 8024-1	Alkyltins: dibutyltin laurate and dibutyltin-di(2 ethylhexoate)	Dibutyltin laurate (CAS 77-58-7); Dibutyltin-di(2 ethylhexoate) (CAS 2781-10-4)
Aquatic Invertebrate Testing - Decosheen Material (LR-8052)	Decosheen Ribbon Materials and pigments: Decosheen Blue in Green Ceres Blue ZV; Decosheen Gold Paste Pigment; Decosheen Royal Blue, Solvent Blue	Decosheen Blue in Green Ceres Blue ZV (CAS 61814-09-3); Decosheen Royal Blue, Solvent Blue [illegible]; Decosheen Gold Paste Pigment (CAS Number [illegible]
R Scratch Remover (Fathead Minnow)	55-65% Water; 20-30% Stoddard Solvent; 1-5% Sodium Silicate; 1-5% Potassium Hydroxide; 0.1-3% Nonylphenoxypoly(oxyethylene)ethanol	Water (CAS 7732-18-5); Stoddard Solvent (CAS 8052-41-3); Sodium Silicate (CAS 1344-09-8); Potassium Hydroxide (CAS 1310-58-3); Nonylphenoxypoly(oxyethylene)ethanol (CAS 9016-45-9)
S Scratch Remover (Fathead Minnow)	60-70% Water; 20-30% Stoddard Solvent; 1-5% Sodium Silicate; 0.1-3% Turgitol NP-33	Water (CAS 7732-18-5); Stoddard Solvent (CAS 8052-41-3); Sodium Silicate (CAS 1344-09-8); Turgitol NP-33 (CAS 9016-45-9)
Octanol Water Partition Coefficient	N-methylperfluorooctane sulfonamidoethanol	CAS 24448-09-7

Master Index to Studies Submitted Under TSCA 8(e) by 3M Company on October 26, 2004
(Confidential Business Information Redacted)

Title	Substance Information	CAS Information
CoCl2.6H2O as Co2+ Toxicity to Microtox Reagent	Cobalt (as Co2+ ion) (CoCl2.6H2O)	CAS 7791-13-1
Activated Sludge Respiration Inhibition Test on CoCl2.6H2O as Co ion	Cobalt (as Co2+ ion) (CoCl2.6H2O)	CAS 7791-13-1
Acute Toxicity of CoCl2.6H20 as Co ion to Daphnia magna under Static Exposure Conditions	Cobalt (as Co2+ ion) (CoCl2.6H2O)	CAS 7791-13-1
Acute Toxicity of CoCl2.6H20 as Co ion to Fathead Minnow under Static Exposure Conditions	Cobalt (as Co2+ ion) (CoCl2.6H2O)	CAS 7791-13-1
Freshwater Algae Growth Inhibition Test	Cobalt (as Co2+ ion) (CoCl2.6H2O)	CAS 7791-13-1
Daphnia magna 21-Day Chronic Reproduction Study	N-ethylperfluorooctane sulfonamidoethanol	CAS 1691-99-2
Plant Growth Effects of [ ]	[ ]	[ ]
Final Report (*Daphnia* and Microtox)	Monomethyl ether of hydroquinone	CAS 150-76-5
Microtox Test Results	2 Ethylhexyl Acrylate; Isooctyl Acrylate Monomer; 2-Methylbutyl acrylate; Methyl isoamyl acrylate; Isooctyl Acrylate	2 Ethylhexyl Acrylate (CAS 103-11-7); Isooctyl Acrylate Monomer (CAS 29590-42-9) 2-Methylbutyl acrylate (CAS 44914-03-6); Methyl isoamyl acrylate (CAS 18993-92-1); Isooctyl Acrylate (CAS 29590-42-9)
Phytotoxicity Test Results	[ ]	[]

Master Index to Studies Submitted Under TSCA 8(e) by 3M Company on October 26, 2004
(Confidential Business Information Redacted)

Title	Substance Information	CAS Information
Plant Toxicity Comparison, Young Seedling Growth	[ ]	[ ]
Ceriodaphnia dubia Survival and Reproduction exposed to Opequon Creek Water Spiked with BETZ 1110 Polymer (November 4, 1987 sample) for seven days under static renewal conditions	BETZ 1110: Non-3M Product - Chemical composition not provided to 3M by manufacturer	MSDS provided by manufacturer states product is "not hazardous" and not "considered to be a carcinogen"
Ceriodaphnia dubia Survival and Reproduction exposed to Opequon Creek Water Spiked with Betz 1138 Polymer (November 4, 1987 sample) for seven days under static renewal conditions	BETZ 1138: Non-3M Product - Chemical composition not provided to 3M by manufacturer	MSDS provided by manufacturer states product is "not hazardous" and not "considered to be a carcinogen"
Toxicity of 1,6 - Hexanediol Diacrylate to *Daphnia magna*	1,6 Hexanediol diacrylate	CAS 13048-33-4
Daphnia magna Chronic Bioassay Under Static Renewal Conditions	Methyl isoamyl acrylate	CAS 18993-92-1
Estimating the Chronic Toxicity of Nalclear 7177 to *Ceriodaphnia* Survival and Reproduction Using Short-Term Tests	Nalclear 7177 wastewater treatment acrylamide/acrylate polymer - Chemical composition not provided to 3M by manufacturer	CAS Information not provided to 3M by manufacturer
Acute Toxicity of Isooctyl Acrylate to *Daphnia magna*	Isooctyl Acrylate Monomer	CAS 29590-42-9
Static Acute Toxicity of [ ] to the Daphnid, *Daphnia magna*	Tolyltriazole	CAS 29385-43-1
Static Acute Toxicity of [ ] to the Alga, *Selenastrum capricomutum*	Tolyltriazole	CAS 29385-43-1
Static Acute Toxicity of [ ] to the Daphnid, *Daphnia magna*	[ ]	[ ]
Static Acute Toxicity of [ ] to the Fathead Minnow, *Pimephales promelas*	[ ]	[ ]
Static Acute Toxicity of [ ] to the Daphnid, *Daphnia magna*	water; propylene-tetrafluoroethylene polymer; tert-butyl alcohol	water (7732-18-5); propylene-tetrafluoroethylene polymer (27029-05-6); tert-butyl alcohol (75-65-0)

Master Index to Studies Submitted Under TSCA 8(e) by 3M Company on October 26, 2004
(Confidential Business Information Redacted)

Title	Substance Information	CAS Information
Isooctyl acrylate: Fish, Acute Toxicity Test	Isooctyl Acrylate Monomer	CAS 29590-42-9
Isooctyl Acrylate: *Daphnia sp.* Acute Immobilization Test	Isooctyl Acrylate Monomer	CAS 29590-42-9
Isooctyl Acrylate: Alga, Growth Inhibition Test	Isooctyl Acrylate Monomer	CAS 29590-42-9
Isooctyl Acrylate: *Daphnia sp.* Reproduction Test	Isooctyl Acrylate Monomer	CAS 29590-42-9
Acute Toxicity of [ ] to the mysid, *Mysidopsis bahia*	[ ]	[ ]
Final Report (Microtox)	[ ]	[ ]
Determination of the Partition Coefficient (N-Octanol/Water) of T-5896 by High Performance Liquid Chromatography (HPLC)	N-methyl perfluorooctane sulfonamido ethanol; N-methyl perfluorooctane sulfonamidethyl acrylate	N-methyl perfluorooctane sulfonamido ethanol (CAS 25268-77-3); N-methyl perfluorooctane sulfonamidethyl acrylate (CAS 24448-09-7)
OECD Activated Sludge Respiration Inhibition Test Results	N-Dodecyltrimethylammonium chloride	CAS = 112-00-5
Final Report (Fish Acute Toxicity)	Mirataine CB (30% Cocamidopropyl betaine = Amides, coco, N-(3-(dimethylamino)propyl), alkylation products with chloroacetic acid, sodium salts, 70% Water and Inerts); Mirataine COB (30% Coco/Oleamidopropyl Betaine = 1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-coco acyl derivs., inner salt)	Cocamidopropyl betaine (CAS 70851-07-9); Coco/Oleamidopropyl Betaine (CAS 61789-40-0)
A Flow-Through Life-Cycle Toxicity Test With the Saltwater Mysid (*Mysidopsis bahia*)	Perfluorooctane sulfonate	CAS 1763-23-1
Lithium: Alga, Acute toxicity Tests	Lithium Chloride	CAS 7447-41-8
An Early Life-Stage Toxicity Test With the Fathead Minnow (*Pimephales promelas*)	Perfluorooctane sulfonate	CAS 1763-23-1
Lithium: Fish, Acute toxicity Tests	Lithium Chloride	CAS 7447-41-8
Lithium: *Daphnia*, Acute toxicity Tests	Lithium Chloride	CAS 7447-41-8
Summary of Toxicity Testing on OSCl and OSF	Octane sulfonyl chloride and Octane sulfonyl fluoride	Octane sulfonyl fluoride (CAS 7795-95-1), Octane sulfonyl chloride (CAS 4063-63-5)
Toxicity to Microtox Test	Lauryldimethylamineoxide	CAS 1643-20-5

Master Index to Studies Submitted Under TSCA 8(e) by 3M Company on October 26, 2004
(Confidential Business Information Redacted)

Title	Substance Information	CAS Information
Ecotoxicological Testing of CoCl2.6H2O as Co2+ ion (Seed Germination and Root Elongation)	Cobalt (as Co2+ ion) (CoCl2.6H2O)	CAS 7791-13-1

ENVIRONMENTAL LABORATORY

ACUTE TOXICITY OF ISOOCTYL ACRYLATE TO

DAPHNIA MAGNA

Prepared By:

S.A. Beach

3M Environmental Laboratory
St Paul, MN

July 26, 1990

INTRODUCTION

Acute toxicity tests performed with Cladocera (generally Daphnia magna or D. pulex) have gained widespread acceptance as a means of predicting potential harmful effects of possible environmental contaminants on aquatic invertebrates. The data may also be extrapolated to predict safe and harmful exposure levels for other aquatic species. Three general methodologies currently exist for performing acute toxicity tests with Daphnia: static, static renewal, and flow-through procedures.

The purpose of this study was to evaluate the acute effects of Isooctyl Acrylate to Daphnia magna under static conditions.

MATERIALS AND METHODS

Test Substance:	Isooctyl Acrylate (IOA) [ ] Lot 1419)
Appearance	Clear liquid
Date Received	10/1/87
Storage	Refrigerator
Stock Solution	Made in oxygen-saturated, carbon-filtered well water which was further filtered through a Millipore 0.2 um filter. Added 100 uL IOA to 3 liters well water and allowed to mix overnight in the dark at ambient room temperature. Test material floating on the surface was removed with suction. Remainder of stock solution transferred to a 3 liter seperatory funnel; solution was decanted from the bottom. Initial stock solution pH was 8.1.
Reported Values	Test material was tested as 100% active ingredient. The reported values were based on measured concentrations (using Gas Chromatography) in the test media at the beginning of the test.

Test Organisms	Daphnia magna
Source:	USEPA-ERL Duluth, MN
Date Received:	8/14/86
Age:	< 24-hrs
Holding & Acclimation	
Dissolved Oxygen, mg/L:	>5
Photoperiod:	16-hrs light; 8-hrs dark
Lighting:	Cool-white fluorescent light
Mortality 48-hrs prior to test:	<5%
Feeding:	Suspension of digested trout chow, yeast, and Cerophyll[R] (powdered, dried cereal leaves) on a daily basis, except during the test.
Test Conditions	
Test Vessels:	250 mL Pyrex Erlenmeyer flasks with ground-glass stoppers. Flasks filled completely with test solution and capped leaving no head space. Separate flasks were prepared for the measurement of pH, dissolved oxygen, temperature and IOA during the test period.
Test Volume:	250 mL
Loading:	10 Daphnia/vessel
No. Replicates:	Two
Initial Test Concentrations-nominal:	0.3, 0.56, 1.0, 1.8, 3.0 mg/L
-measured:	0.17, 0.37, 0.64, 1.15, 2.14 mg/L

Test Conditions (Cont.)

Control Water:	Carbon-filtered well water aerated with filtered air. See Table 1 for water quality analysis. This water was also used for culturing the Daphnia.
Test Temp., °C	20 ± 2
Exposure Period:	48-hrs
Measurements:	Immobilization, Temp., IOA, 24 & 48-hrs; pH, D.O., 48-hrs.
Date Test Initiated:	3/23/88
Date Test Terminated:	3/25/88
Procedure:	The protocol followed the recommendations of the OECD Guidelines for Testing of Chemicals (1). Values were reported to different levels of significance depending on the precision of the measuring devices involved in any one process.

CALCULATIONS

The reported values are based on measured concentrations in the test media at the beginning of the bioassay. A total of twenty Daphnia were exposed to each concentration. The concentrations tested and the corresponding response data derived from the duplicated toxicity tests were used to calculate the median effective concentration, "EC_{50}" and the 95% confidence interval by standard logistic regression methods (Probit Analysis).

RESULTS

Percent mortality (including immobilization) values obtained after 24 and 48 hours of exposure to Isooctyl Acrylate are summarized in Table 2.

In duplicated measurements, the median effective concentration (48-hour EC_{50}) and the 95% confidence interval for Isooctyl Acrylate were reported as 1.40 (1.19-1.68) mg/L.

ACCEPTABILITY CRITERIA

This toxicity test meets quality criteria provided in test guidelines:

1) Immobilization in the control did not exceed 10% at the end of the test.
2) Test Daphnia were not trapped at the surface of the water.
3) The dissolved oxygen concentrations did not fall below 4.0 mg/L at the end of the test.
4) Test temperature did not vary more than $2^{0}C$ in any 24-hour period.

This test was conducted as requested by R.E. Purdy of the 3M Environmental Laboratory.

REFERENCES

(1) OECD. 1984. Daphnia sp., acute immobilization test and reproductive test, 202. Guidelines for Testing of Chemicals. Organization for Economic Cooperation and Development, Paris, France.

(2) OECD. 1981. Principles of Good Laboratory Practice, Annex 2, C(81) 30 (Final): 7-28. OECD Guidelines for Testing of Chemicals. Organization for Economic Cooperation and Development, Paris, France.

(3) Commission Directive 84/449/EEC. 1984. Acute toxicity for Daphnia test, C.2. Official Journal of the European Communities, No. L251, 9/19/84. Luxemburg, Denmark.

(4) U.S. EPA. 1987. Toxic substances; testing requirements; final rules and proposed rule - revision of TSCA test guidelines (40 CFR parts 796, 797, and 798). Federal Register, 52 (97): 19056-19081.

(5) ASTM. 1987. Standard practice for conducting acute toxicity with fishes, macroinvertebrates, and amphibians, E-729. Annual Book of ASTM Standards, Section 11, Volume 11.04. American Society for Testing and Materials, Philadelphia, PA.

(6) APHA/AWWA/WPCF. 1985. Standard Methods for the Examination of Water and Wastewater, 16th Edition. American Public Health Association, American Water Works Association, and Water Pollution Control Federation, Washington, DC.

TABLE 1

LAB REQUEST NO. F1419

REQUESTOR NAME: RR ROBIDEAU/SAB
DEPARTMENT: 0222
PROJECT NO: 06
DATE RECEIVED: 04/01/1988
DESC: CARBON-FILTERED WELL WATER-MARCH 1988

CONTRACT LAB: PACE
CONTRACT LAB COST: 0
3M E-L HOURS: 1
EXP COMP DATE: 04/15/1988
DATE COMPLETED: 04/22/1988

ORIGINAL SOURCE OF WELL WATER, 3M WELL #2, ST. PAUL, MN.

SAMPLE	DATE	CODE	DESCRIPTION	RESULT	MIN DET LIMIT
1	04/01/88	ROOM 4	WELL WATER		
		*COD		<5 MG/L	5
		*SPECIFIC CONDUCTANCE		510 UMHOS/CM	
		*AMMONIA NITROGEN - as N		<0.1 MG/L	0.1
		pH		7.6 UNITS	
		*SOLUBLE FLUORIDE (PROBE)		0.1 MG/L	
		*STANDARD PLATE COUNT		4 COL/ML	
		*TOTAL DISSOLVED SOLIDS		260 MG/L	
		*TOTAL ALKALINITY (PH 4.5)		230 MG/L	
		*TOTAL COLIFORM		<1 COL/100ML	1
		*TOTAL HARDNESS		260 MG/L	
		*TOTAL RESIDUAL CHLORINE		<0.02 MG/L	
		*TOTAL SOLIDS		310 MG/L	
		*TOTAL SUSPENDED SOLIDS		<1 MG/L	1

* = CONTRACT LAB

SUBMITTED BY: [signature] DATED: 4-22-88

TABLE 2

SUMMARY OF ACUTE TOXICITY OF ISOOCTYL ACRYLATE TO DAPHNIA MAGNA UNDER STATIC EXPOSURE CONDITIONS[1]

MEASURED TEST CONC. mg/L [2]	PERCENT MORTALITY 24-HOURS	48-HOURS
Blank Control	0	0
0.17	0	0
0.37	0	0
0.64	0	0
1.15	0	35
2.14	15	85
EC_{50} (95% Confidence Interval), mg/L[3]	> 2.14	1.40 (1.19 - 1.68)

(1) Data are averages of two replications for each test concentration with ten (10) daphnids per replicate. A total of twenty daphnids were exposed per concentration.

(2) See Table 3 for individual IOA concentrations measured by GC.

(3) Values were calculated using standard logistic regression methods (Probit Analysis).

TABLE 3

ACUTE TOXICITY OF ISOOCTYL ACRYLATE TO DAPHNIA MAGNA

VALUES OBTAINED BY GC ANALYSIS (a) AND REPORTED MEANS mg/L

0-Hrs Exposure

Nominal Conc.	Rep. 1	Rep. 2	Mean
0.3	0.17, 0.16	NA	0.17
0.56	0.37, 0.36	NA	0.37
1.0	0.63, 0.65	NA	0.64
1.8	1.14, 1.16	NA	1.15
3	2.10, 2.17	NA	2.14

24-Hrs Exposure

Nominal Conc.	Rep. 1	Rep. 2	Mean
0.3	0.20, 0.21	0.20, 0.21	0.21
0.56	NA (b)	NA	NA
1.0	0.62, 0.65	0.64, 0.61	0.63
1.8	NA	NA	NA
3	1.97, 2.04	1.95, 1.94	1.98

48-Hrs Exposure

Nominal Conc.	Rep. 1	Rep. 2	Mean
0.3	0, 0	0, 0	0
0.56	0.22, 0.24	0.23, 0.22	0.23
1	0.46, 0.46	0.43, 0.45	0.45
1.8	0.85, 0.89	0.84, 0.84	0.86
3	1.45, 1.57	1.46, 1.49	1.50

(a) From [ ]
(b) Not analyzed

ENVIRONMENTAL LABORATORY
DAPHNIA TOXICITY DATA SHEET

[

TEST TYPE 48-HR Acute Static CHEMICAL TESTED Isooctyl Acrylate LOT# 1419

TEST ORGANISM Daphnia magna SOURCE US EPA ERL Duluth, MN DATE REC'D 8-14-86

AGE OF TEST ORGANISMS: <24 hrs. old instars (neonates). NO. ORGANISMS PER TREATMENT 10

TEST VESSEL: 250 ml Erlenmeyer Flask with ground-glass stopper HEIGHT: 10.5 cm

TIME STARTED 9:30 am DATE STARTED 3-23-88 DATE COMPLETED 3-25-88

DILUTION WATER Carbon-filtered well water[1] (Temp. 21 °C, D.O. 9.0 mg/L, pH 8.1)

ANALYST Susan A. Beach EC_{50} (95% Confidence Limits) 2.2 (1.7 - 2.9) mg/L

Combined = 2.1 (1.8 - 2.4) mg/L

Probit analysis - Nominal Concentrations

Test Vessel No.	Initial Conc. mg/L	Total Amount Added ml[2]	24 Hours Total No. Dead	24 Hours pH	24 Hours D.O. mg/L	48 Hours Total No. Dead	48 Hours pH	48 Hours D.O. mg/L
I	Control	—	0			0	8.1	8.6
1-1	0.3	25	0			0		
1-2	0.56	47	0			0		
1-3	1.0	83	0			0		
1-4	1.8	150	0			3		
1-5	3.0	250	1			8		
Test Temp. °C			21			21		
Initials & Date			SAB 3-24-88			SAB 3-25-88		

(1) Aerated, carbon-filtered well water, passed through a 0.2μ Millipore filter, used as control media and diluent

Comments: (2) Stock solution: 10C ml / 3 L diluent

See pg 1 for stock solution preparation

Initial pH highest conc. tested, 3.0 mg/L: = 8.1

Test solutions reached midway in neck of test vessels
Excess forced out with stopper to leave no head space.
Vessels remained stoppered throughout test.
Pasteur pipets used to introduce daphnia left in test vessels.

Test methodology conforms with the following two test protocols:
(1) OECD #202 "Daphnia sp., Acute Immobilization Test and Reproduction Test".
(2) US-EPA #EG-1 "Daphnid Acute Toxicity Test".

ENVIRONMENTAL LABORATORY
DAPHNIA TOXICITY DATA SHEET

TEST TYPE 48-HR Acute Static CHEMICAL TESTED Isooctyl Acrylate LOT 1419

TEST ORGANISM Daphnia magna SOURCE US EPA ERL Duluth, MN DATE REC'D 8-14-86

AGE OF TEST ORGANISMS: <24 hrs. old instars (neonates). NO. ORGANISMS PER TREATMENT 10

TEST VESSEL: 250 ml Erlenmeyer Flask with ground-glass stopper HEIGHT: 10.5 cm

TIME STARTED 9:30 am DATE STARTED 3-23-88 DATE COMPLETED 3-25-88

DILUTION WATER Carbon-filtered well water[1] (Temp. 21 °C, D.O. 9.0 mg/L, pH 8.1)

ANALYST Susan A. Beach EC_{50} (95% Confidence Limits) 2.0 (1.6 - 2.5) mg/L

Combined = 2.1 (1.8 - 2.4) mg/L

Probit analysis - Nominal Concentrations

Test Vessel No.	Initial Conc. mg/L	Total Amount Added ml[2]	24 Hours Total No. Dead	24 Hours pH	24 Hours D.O. mg/L	48 Hours Total No. Dead	48 Hours pH	48 Hours D.O. mg/L
II	Control	—	0			0		
2-1	0.3	25	0			0		
2-2	0.56	47	0			0		
2-3	1.0	83	0			0		
2-4	1.8	150	0			4		
2-5	3.0	250	2			9		
Test Temp. °C			21			21		
Initials & Date			SAB 3-24-88			SAB 3-25-88		

(1) Aerated, Carbon-filtered well water, passed through a 0.2 µ Millipore filter, used as control media and diluent.

Comments: (2) Stock Solution - 100ml / 3 L Diluent

See pg 1 for Stock Solution preparation

Initial pH highest conc. tested 3.0 mg/L = 8.1

Test solutions reached midway in neck of test vessels

Excess forced out with stopper to leave no head space.
Vessels remained stoppered throughout test.
Pastur pipets used to introduce daphnia left in test vessels.

Test methodology conforms with the following two test protocols:
(1) OECD #202 "Daphnia sp., Acute Immobilization Test and Reproduction Test".
(2) US-EPA #EG-1 "Daphnid Acute Toxicity Test".

ENVIRONMENTAL LABORATORY
DAPHNIA TOXICITY DATA SHEET

TEST TYPE 48-HR Acute Static CHEMICAL TESTED Isooctyl Acrylate LOT 1419
TEST ORGANISM Daphnia magna SOURCE US EPA ERL Duluth, MN DATE REC'D 8-14-86
AGE OF TEST ORGANISMS: ≤24 hrs. old instars (neonates). NO. ORGANISMS PER TREATMENT 10
TEST VESSEL: 250 ml Erlenmeyer Flask with ground-glass stopper HEIGHT: 10.5 cm
TIME STARTED 9:30 am DATE STARTED 3-23-88 DATE COMPLETED 3-25-88
DILUTION WATER Carbon-filtered well water (1) (Temp. 21 °C, D.O. 9.0 mg/L, pH 8.1)
ANALYST Susan A. Beach EC_{50} (95% Confidence Limits)

Extra Vessels Set for pH + D.O. Readings at 48-HRS

Test Vessel No.	Initial Conc. mg/L	Total Amount Added ml (2)	24 Hours			48 Hours		
			Total No. Dead	pH	D.O. mg/L	Total No. Dead	pH	D.O. mg/L
	Control							
3-1 Low	0.3	25	0			0	8.1	8.6
3-2 Middle	1.0	83	0			0	8.1	8.6
3-3 High	3.0	250	1			7	8.0	8.5
Test Temp. °C			21			21		
Initials & Date			SAB 3-24-88			SAB 3-25-88		

(1) Aerated, Carbon-filtered well water, passed through a 0.2μ Millipore filter, used as control media and dilvent.

Comments: (2) Stock Solution - 100ul / 3L Diluent
See pg 1 for Stock Solution preparation
Initial pH highest conc. tested 3.0 mg/L = 8.1
Test solutions reached midway in neck of test vessels.
Excess forced out with stopper to leave no head space.
Vessels remained capped throughout test.
Pasteur pipets used to introduce daphnia left in test vessels

Test methodology conforms with the following two test protocols:
(1) OECD #202 "Daphnia sp., Acute Immobilization Test and Reproduction Test".
(2) US-EPA #EG-1 "Daphnid Acute Toxicity Test".

Isooctyl Acrylate toxicity to D. magna - measured conc. 48-hrs exp.

Conc.	Number Exposed	Number Resp.	Observed Proportion Responding	Adjusted Proportion Responding	Predicted Proportion Responding
0.1700	20	0	0.0000	0.0000	0.0000
0.3700	20	0	0.0000	0.0000	0.0002
0.6400	20	0	0.0000	0.0000	0.0175
1.1500	20	7	0.3500	0.3500	0.2974
2.1400	20	17	0.8500	0.8500	0.8727

Chi - Square Heterogeneity = 0.717

Mu = 0.146544
Sigma = 0.161384

Parameter	Estimate	Std. Err.	95% Confidence Limits
Intercept	4.091956	0.273645	(3.555612, 4.628300)
Slope	6.196394	1.277671	(3.692160, 8.700629)

Theoretical Spontaneous Response Rate = 0.0000

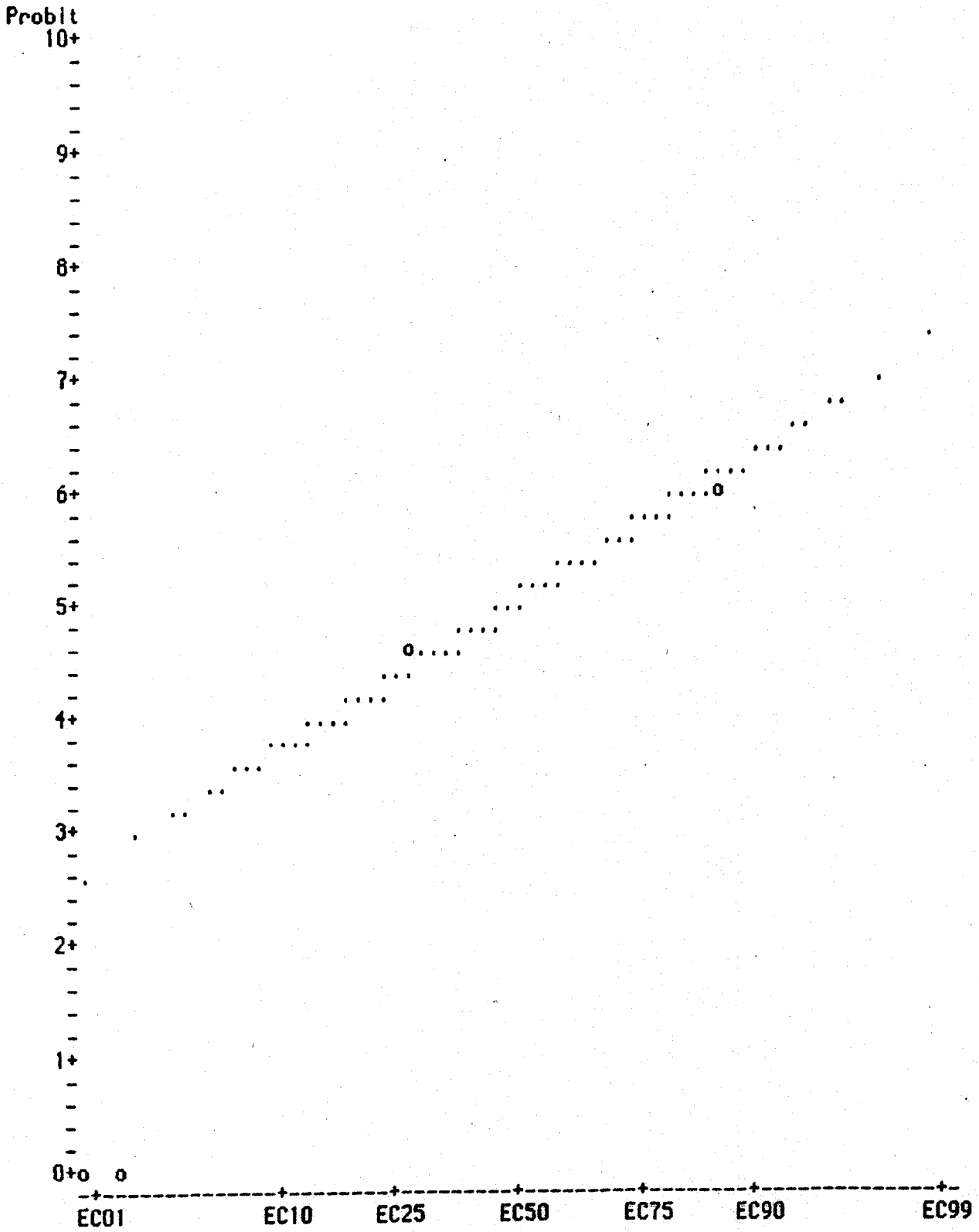
Isooctyl Acrylate toxicity to D. magna - measured conc. 48-hrs exp.

Estimated EC Values and Confidence Limits

Point	Conc.	Lower 95% Confidence	Upper Limits
EC 1.00	0.5904	0.3244	0.7767
EC 5.00	0.7605	0.4896	0.9427
EC10.00	0.8704	0.6069	1.0502
EC15.00	0.9534	0.6992	1.1333
EC50.00	1.4013	1.1872	1.6760
EC85.00	2.0597	1.7143	2.9141
EC90.00	2.2562	1.8460	3.3649
EC95.00	2.5823	2.0522	4.1796
EC99.00	3.3264	2.4860	6.3200

Isooctyl Acrylate toxicity to D. magna - measured conc. 48-hrs exp.

PLOT OF ADJUSTED PROBITS AND PREDICTED REGRESSION LINE



SUMMARY OF ACUTE TOXICITY OF ISOOCTYL ACRYLATE TO DAPHNIA MAGNA

Test Initiated: 3/23/88; terminated 3/25/88.

Test Substance: Isooctyl Acrylate (IOA) [ ] Lot 1419). No carrier used to prepare test solutions.

Test Organism: Daphnia magna, obtained from the US EPA-ERL, Duluth, MN; received 8/14/86. Cultured continuously in-house at the 3M Environmental Laboratory, Building 2-3E-09, St Paul, MN. Cultures fed a suspension of digested trout chow, yeast, and Cerophyll^{R} (powdered, dried cereal leaves) on a daily basis, except during a test. Daphnids housed in 4-liter Pyrex^{R} glass beakers containing two liters of carbon-filtered well water (3M well #2, St Paul, MN). Cultures moved to fresh water at least twice a week; subcultures initiated with <24-hr old instars once a week.

Test Solutions: Stock solution: 100 ul IOA added to 3.0 liters well water, mixed overnight. After mixing, test material not in solution removed by suction. Stock solution pH 8.1. IOA concentration determined by gas chromatography in stock and test solutions.

Control and diluent water: Carbon-filtered well water; aerated to saturation prior to use.

Test Conditions: Test vessels: 250 mL Pyrex^{R} Erlenmeyer flasks with ground-glass stoppers. Flasks filled completely with test solution and capped leaving no head space. Pasteur pipets used for the transfer of test organisms left in the test vessels after transfer complete. Extra vessels set up for the measurement of pH, dissolved oxygen, temperature and IOA during the test period.

Test volume: 250 mL.

Loading: 10 < 24-hr old Daphnia per vessel.

Number of replicates: Two.

Physical conditions: Cool-white fluorescent light; 16-hrs light, 8-hrs dark. Temperature; 20 ± 2°C.

Measurements: Immobilization, Temp., IOA, 24 & 48-hrs; pH, D.O., 48-hrs.

Results:

IMMOBILIZATION - number (percent)

	24-HRS		48-HRS	
Measured Conc. mg/L	Rep. 1	Rep. 2	Rep. 1	Rep. 2
BK Control	0 (0)	0 (0)	0 (0)	0 (0)
0.17	0 (0)	0 (0)	0 (0)	0 (0)
0.37	0 (0)	0 (0)	0 (0)	0 (0)
0.64	0 (0)	0 (0)	0 (0)	0 (0)
1.15	0 (0)	0 (0)	3 (30)	4 (40)
2.14	1 (10)	2 (20)	8 (80)	9 (90)

48-HR EC_{50} (95% C.I.) = 1.40 (1.19 - 1.68) mg/L

48-HR EC_{99} (95% C.I.) = 3.33 (2.49 - 6.32) mg/L

48-HR NOEL = 0.64 mg/L